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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,785	03/26/2004	Azeem Feroz	6533/53818	9651

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Law Office of Mark J. Spolyar
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EXAMINER	
PATEL, CHANDRAHAS B	

ART UNIT	PAPER NUMBER
2616	

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01/14/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/810,785	FEROZ ET AL.	
	Examiner	Art Unit	
	Chandrahas Patel	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,14-33,39 and 40* is/are rejected.

7)☒ Claim(s) *9-13, 34-38* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 11/19/2007 have been fully considered but they are not persuasive. Examiner maintains objection to claim 25. Applicant argues that Khisti does not teach increasing the fraction of the initial rate for the flow as the packet count exceeds threshold. However, examiner disagrees. Khisti teaches in Col. 17, line 54 - Col. 18, line 14 increasing the bandwidth if network traffic is increased. Regarding claim 2, Khisti teaches in Col. 16, line 57-Col. 17 line 2, bandwidth corresponds to number of bytes transmitted and value of bottleneck bandwidth is set which is threshold. Regarding claim 8, Khisti teaches estimating the number of packets that can be transmitted and setting threshold value based on number of packets.

2. Examiner withdraws objection to claim 36 in light of amended claim 36.

Specification

3. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

U.S. application number 10/676,631 is not published.

Claim Objections

4. Claim 25 is objected to because of the following informalities: Claim 25 depends from claim 24. Claim 25 refers to "the traffic application database" which is not present in claim 24. "The traffic application database" is in claim 22. Examiner concludes that claim 25 depends from claim 22 for further examination.

Claim Rejections - 35 USC § 102

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 2, 7, 21, 22, 31, 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Khisti et al. (USPN 7,239,611).

Regarding claim 1, Khisti teaches in a network device operative to control data flows transmitted between hosts connected to a computer network, wherein at least some of the hosts employ stow-start mechanisms **[Abstract]**, a method comprising: estimating the initial rate demand for a data flow between a first host and a second host **[Fig. 3A, 301]**; allocating a fraction of the initial rate demand for the flow **[Col. 12, lines 37-42]**; maintaining a count of the packets associated with the flow **[Col. 23, lines 55-60]**; and increasing the fraction of the initial rate demand allocated to the flow as the count crosses at least one threshold **[Col. 23, lines 60-67 – Col. 24, lines 1-9 and Col. 17, line 54 - Col. 18, line 14, increasing the bandwidth if network traffic is increased]**.

Regarding claim 2, Khisti teaches estimating the number of bytes that the first host will transmit before achieving the initial rate demand; and setting the at least one threshold based on the number of bytes in the second estimating step **[Col. 16, line 40 – Col. 17, line 2, Bandwidth**

corresponds to number of bytes transmitted and value of bottleneck bandwidth is set which is threshold].

Regarding claim 7, Khisti teaches the initial rate demand is based on an analysis of at least one data packet corresponding to the data flow **[Fig. 3A, 325]**.

Regarding claim 21, Khisti teaches an apparatus facilitating control data flows transmitted between hosts connected to a computer network, wherein at least some of the hosts employ slow-start mechanisms **[Fig. 1, 120]** comprising: a packet processor operative to detect a data flow in network traffic traversing a communications path **[Fig. 1, 121]**; maintain a count of the packets associated with the data flow **[Col. 23, lines 55-60]**; a path rate detection module operative to estimate the initial rate demand for a data flow **[Fig. 3A, 301]**; estimate, for the data flow, the number of bytes that a sending host will transmit to a receiving host before achieving the initial rate demand **[Col. 16, line 40 – Col. 17, line 2, Bandwidth corresponds to number of bytes transmitted]**; a bandwidth allocation module operative to allocate bandwidth to the data flow based in part on a target rate associated with the data flow **[Fig. 3A, 308]**; and wherein the apparatus is operative to set the initial target rate for the data flow as a fraction of the initial rate demand for the flow **[Col. 12, lines 37-42]**; and increase the target rate associated with the data flow as the count of bytes crosses a threshold value **[Col. 23, lines 60-67 – Col. 24, lines 1-9 and Col. 17, line 54 - Col. 18, line 14, increasing the bandwidth if network traffic is increased]**.

Regarding claim 22, Khisti teaches a traffic classification database including at least one traffic class, at least one attribute defining the at least one traffic class, and at least one bandwidth utilization control corresponding to the at least one traffic class, wherein the traffic

classification is operative to compare attributes stored in association with traffic class identifiers to attributes of the data flow to identify a traffic class that corresponds to the data flow **[Fig. 3B, 310, Col. 19, lines 14-21]**; associate at least one bandwidth utilization control to the data flow based on the identified traffic class **[Col. 19, lines 21-24]**; and wherein the bandwidth allocation module is operative to allocate bandwidth based, at least in part, on the target rate, and the at least one bandwidth utilization control, associated with the data flow **[Fig. 6]**.

Regarding claim 31, Khisti teaches the initial rate demand is based on an analysis of at least one data packet corresponding to the data flow **[Fig. 3A, 325]**.

Regarding claim 32, Khisti teaches an apparatus facilitating control data flows transmitted between hosts connected to a computer network, wherein at least some of the hosts employ slow-start mechanisms **[Fig. 1, 120]** comprising: a packet processor operative to detect a data flow in network traffic traversing a communications path **[Fig. 1, 121]**; maintain a count of the packets associated with the data flow **[Col. 23, lines 55-60]**; a path rate detection module operative to estimate the initial rate demand for a data flow **[Fig. 3A, 301]**; estimate, for the data flow, the number of packets that a sending host will transmit to a receiving host before achieving the initial rate demand **[Col. 21, lines 23-52]**; a bandwidth allocation module operative to allocate bandwidth to the data flow based in part on a target rate associated with the data flow **[Fig. 3A, 308]**; and wherein the apparatus is operative to set the initial target rate for the data flow as a fraction of the initial rate demand for the flow **[Col. 12, lines 37-42]**; and increase the target rate associated with the data flow as the count of packets crosses a threshold value **[Col. 23, lines 60-67 – Col. 24, lines 1-9 and Col. 17, line 54 - Col. 18, line 14, increasing the bandwidth if network traffic is increased]**.

Claim Rejections - 35 USC § 103

7. Claims 3, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Sivakumar et al. (USPN 7,218,610).

Regarding claim 3, Khisti teaches a method as discussed in rejection of claim 2.

However, Khisti does not teach estimating the round trip time between the first and second host; and multiplying the initial demand rate associated with the data flow by the round trip time.

Sivakumar teaches estimating the round trip time between the first and second host; and multiplying the initial demand rate associated with the data flow by the round trip time **[Col. 11, lines 51-57]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to multiply the initial demand rate associated with the data flow by the round trip time so that time for the congestion control algorithm to reach the ideal operating rate is reduced **[Col. 11, lines 57-58]**.

Regarding claim 27, Khisti teaches estimating the number of bytes that a sending host will transmit before achieving the initial rate demand **[Col. 16, lines 40-44, Packet Size is the number bytes]**.

However, Khisti does not teach the path rate detection module is operative to estimate the round trip time between the sending and receiving host; and multiply the initial demand rate associated with the data flow by the round trip time.

Sivakumar teaches the path rate detection module is operative to estimate the round trip time between the sending and receiving host; and multiply the initial demand rate associated with the data flow by the round trip time **[Col. 11, lines 51-57]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to multiply the initial demand rate associated with the data flow by the round trip time so that time for the congestion control algorithm to reach the ideal operating rate is reduced **[Col. 11, lines 57-58]**.

8. Claims 4, 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Sivakumar et al. (USPN 7,218,610) as applied to claims 3, 27 above, and further in view of Klinker et al. (USPN 7,222,190).

Regarding claims 4, 28, the references teach a method, the apparatus as discussed in rejection of claims 3, 27.

However, the references do not teach the round trip time is based on analysis of the arrival times of the handshake packets corresponding to the data flow.

Klinker teaches round trip time is based on analysis of the arrival times of the handshake packets corresponding to the data flow **[Fig. 7, 791]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to base round trip time on analysis of the arrival times of the handshake packets TCP connection uses such a process **[Col 18, lines 63-67 – Col 19, line 1]**.

Regarding claims 29, the references teach a method, the apparatus as discussed in rejection of claim 27.

However, the references do not teach the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow.

Klinker teaches the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow **[Col. 13, lines 41-50]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the rate based on the arrival times of handshake packets since TCP sessions use handshake to establish a session **[Col. 13, lines 41-43]**.

Regarding claim 30, Klinker teaches the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow **[Col. 13, lines 41-50]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the rate based on the arrival times of handshake packets since TCP sessions use handshake to establish a session **[Col. 13, lines 41-43]**.

9. Claims 5, 6, 39, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Klinker et al. (USPN 7,222,190).

Regarding claims 5 and 39, Khisti teaches a method, and an apparatus as discussed in rejection of claim 1 and 32.

However, Khisti does not teach the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow.

Klinker teaches the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow **[Col. 13, lines 41-50]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the rate based on the arrival times of handshake packets since TCP sessions use handshake to establish a session **[Col. 13, lines 41-43]**.

Regarding claims 6 and 40, Khisti further teaches the initial rate demand is based on an analysis of at least one data packet corresponding to the data flow **[Fig. 3A, 325]**.

10. Claims 8, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Aoki et al. (USPN 6,757,255).

Regarding claim 8, Khisti teaches a method as discussed in rejection of claim 1.

However, Khisti does not teach estimating the number of packets that the first host will transmit before achieving the initial rate demand; and setting the at least one threshold based on the number of packets in the second estimating step.

Aoki teaches estimating the number of packets that the first host will transmit before achieving the initial rate demand; and setting the at least one threshold based on the number of packets in the second estimating step **[Col. 19, lines 62-67 – Col. 20, lines 1-7, estimating the number of packets that can be transmitted and setting threshold value based on number of packets]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to set threshold based on the number of packets so that measurement accuracy can be enhanced **[Col. 1, lines 63-67]**.

Regarding claim 14, Aoki teaches initial rate is based on an analysis of the arrival times of handshake packets corresponding to the data flow **[Col. 7, lines 11-14, based on RTT rate can be calculated as explained in Col. 8, lines 48-56]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use handshake packets to estimate initial rate since handshaking is always done before a TCP connection **[Col. 7, lines 14-15]**.

Regarding claims 15, 16, Khisti further teaches the initial rate demand is based on an analysis of at least one data packet corresponding to the data flow **[Fig. 3A, 325]**.

11. Claims 17-20, 26, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Li et al. (USPN 6,757,248).

Regarding claim 17, Khisti teaches a method as discussed in rejection of claim 1.

However, Khisti does not teach monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow; upon detection of at least one of the indications, resetting the count of the packets for the flow; and repeating the allocating, maintaining and increasing steps.

Li teaches monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow **[Col. 24, lines 1-6]**; upon detection of at least one of the indications, resetting the count of the packets for the flow; and repeating the allocating, maintaining and increasing steps **[Col. 24, lines 1-24]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to restart the slow start mechanism for data flow since if the network is congested

retransmission will occur if duplicate ACKs are received **[Col. 4, lines 55-67 – Col. 5, lines 1-15]**.

Regarding claim 18, Li teaches determining whether at least one data packet corresponding to the data flow is a re-transmission of a previous packet **[Col. 5, lines 1-15]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine if at least one data packet is a re-transmission of a previous packet so that slow start threshold can be set accordingly **[Col. 5, lines 1-15]**.

Regarding claim 19, Li teaches determining whether the re-transmitted packet arrived a threshold period of time after the last packet corresponding to the data flow **[Col. 10, lines 28-32]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine if re-transmitted packet arrived a threshold period of time after the last packet so that it could be decided if congestion window should be changed or not **[Col. 10, lines 33-40]**.

Regarding claim 20, Li teaches determining whether the packet arrived a threshold period of time after the last packet corresponding to the data flow **[Col. 10, lines 28-32]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine if the packet arrived a threshold period of time after the last packet so that it could be decided if congestion window should be changed or not **[Col. 10, lines 33-40]**.

Regarding claim 26, Khisti teaches a method as discussed in rejection of claim 21.

However, Khisti does not teach monitoring for at least one indication that the sending host as re-initiated the slow start mechanism for the data flow; upon detection of at least one of

the indications, resetting the count of the bytes for the flow; and resetting the target rate for the data flow to the initial target rate.

Li teaches monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow **[Col. 24, lines 1-6]**; upon detection of at least one of the indications, resetting the count of the bytes for the flow; and resetting the target rate for the data flow to the initial target rate **[Col. 24, lines 1-24]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to restart the slow start mechanism for data flow since if the network is congested retransmission will occur if duplicate ACKs are received **[Col. 4, lines 55-67 – Col. 5, lines 1-15]**.

Regarding claim 33, Khisti teaches a method as discussed in rejection of claim 32.

However, Khisti does not teach monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow; upon detection of at least one of the indications, resetting the count of the packets for the flow; and resetting the target rate for the data flow to the initial target rate.

Li teaches monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow **[Col. 24, lines 1-6]**; upon detection of at least one of the indications, resetting the count of the packets for the flow; and resetting the target rate for the data flow to the initial target rate **[Col. 24, lines 1-24]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to restart the slow start mechanism for data flow since if the network is congested

retransmission will occur if duplicate ACKs are received **[Col. 4, lines 55-67 – Col. 5, lines 1-15]**.

12. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Zhang et al. (USPN 7,154,858).

Regarding claims 23, 24, Khisti teaches the apparatus as discussed in rejection of claim 21.

However, Khisti does not teach parsing at least one packet associated with the flow into a flow specification, wherein said flow specification contains at least one instance of any one of the following: a protocol family designation, a direction of packet flow designation, a protocol type designation, a pair of hosts, a pair of ports, a pointer to a MIME type a pointer to an application-specific attribute.

Zhang teaches parsing at least one packet associated with the flow into a flow specification, wherein said flow specification contains at least one instance of any one of the following: a protocol family designation, a direction of packet flow designation, a protocol type designation, a pair of hosts, a pair of ports, a pointer to a MIME type a pointer to an application-specific attribute **[Col. 13, lines 43-47]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to identify at least one packet so that it could be checked if the flow matches any established traffic flows **[Col. 5, line 67 – Col. 6, lines 1-3]**.

Regarding claim 25, Khisti teaches the apparatus as discussed in rejection of claim 22.

However, Khisti does not teach matching the flow specification to a plurality of traffic classes, each of the traffic classes defined by one or more matching attributes; and thereupon, having found a matching traffic class in the matching step, associates the flow specification with traffic crass from the plurality of traffic classes.

Zhang teaches matching the flow specification to a plurality of traffic classes, each of the traffic classes defined by one or more matching attributes; and thereupon, having found a matching traffic crass in the matching step, associates the flow specification with a traffic class from the plurality of traffic classes **[Col. 5, lines 67 – Col. 6, lines 1-3]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to match the flow specification to a plurality of traffic classes so that if the flow matches any of the established traffic flows it could be accorded to the packets **[Col. 5, lines 67 – Col. 6, lines 1-3]**.

Allowable Subject Matter

13. Claims 9-13, 34-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chandrahas Patel whose telephone number is 571-270-1211. The examiner can normally be reached on Monday through Thursday 7:30 to 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CBP

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SUPERVISORY PATENT EXAMINER